

Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/US05/000412

International filing date: 07 January 2005 (07.01.2005)

Document type: Certified copy of priority document

Document details: Country/Office: US
Number: 60/535,373
Filing date: 09 January 2004 (09.01.2004)

Date of receipt at the International Bureau: 03 February 2005 (03.02.2005)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)



World Intellectual Property Organization (WIPO) - Geneva, Switzerland
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse

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APPLICATION NUMBER: 60/535,373

FILING DATE: *January 09, 2004*

RELATED PCT APPLICATION NUMBER: PCT/US05/00412



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16523 U.S. PTO
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. EL 900960775 US

INVENTOR(S)					
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Additional inventors are being named on the _____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (500 characters max)					
Bifenthrin/Acetamiprid Compositions for Control of General Household Pests					
Direct all correspondence to: CORRESPONDENCE ADDRESS					
<input type="checkbox"/> Customer Number: _____					
OR					
<input checked="" type="checkbox"/> Firm or Individual Name		Patent Administrator, FMC Corporation			
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ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages 9		<input type="checkbox"/> CD(s), Number _____			
<input type="checkbox"/> Drawing(s) Number of Sheets _____		<input checked="" type="checkbox"/> Other (specify) Exp. Mail Stmt.; Postcard			
<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.				FILING FEE Amount (\$)	
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<input checked="" type="checkbox"/> No.					
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Respectfully submitted,

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(If appropriate)

Docket Number: 60335-USA-PROV1

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Docket Number 60335-USA-PROV1

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Practitioner's Docket No. 60335-USA-PROV1

Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Dina L. Richman, James B. Ballard, Kim Watson, Cristi L. Palmer

Application No.: to be assigned

Filed: 1/09/2004

For: Bifenthrin/Acetamiprid Compositions for Control of General Household Pests

Commissioner for Patents
Alexandria, VA 22313-1450

EXPRESS MAIL CERTIFICATE


"Express Mail" label number EL 900960775 US
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BIFENTHRIN/ACETAMIPRID COMPOSITIONS FOR CONTROL OF
GENERAL HOUSEHOLD PESTS

The present invention relates generally to insecticidal compositions. In particular, it pertains to compositions of insecticides useful for control of general household pests.

BACKGROUND OF THE INVENTION

General household pests are insects that have the potential to cause nuisance or harm to person and property, such as the German cockroach, American cockroach, Smokey-Brown cockroach, Oriental cockroach, house fly, red imported fire ant (RIFA), odorous house ant, carpenter ant, pharaoh ant, Argentine ant, mosquito, tick, flea, sowbug, pillbug, centipede, spider, silverfish, scorpion and bed bug. The following are some examples of nuisance or harm to persons and property. Cockroaches and flies can appear in people's living environment at any place and at any time. They generally contaminate food and articles subjecting people to threats of bacteria and viruses. The continued proliferation of colonies of red imported fire ants, *Solenopsis invicta*, are becoming a serious problem in the United States. Fire ants are attracted to electrical circuits and can cause failures in transformers, cables, connectors and related electrical hardware. Fire ants also can sting persons or animals and generally cause a localized allergic reaction on the area of the skin punctured by their stinging. Some individuals suffer a severe allergic reaction that can lead to anaphylactic shock, which can be fatal if not treated promptly. Many of the general household pests are potentially dangerous since their bites or stings can similarly lead to allergic reaction.

Insecticidal compositions have commonly been used to control general household pests. Of primary concern in developing an insecticidal composition to control general household pests is the insecticide's 'knockdown' and 'mortality' characteristics. Knockdown refers to quick (usually within 10 minutes, depending on the pest), short-term immobilization or death of the pest. Mortality refers to death of the pest. An optimal insecticide composition would have knockdown and mortality rates at or near 100% for all general household pests. Current insecticidal compositions, for example,

have red imported fire ant and German cockroach mortality rates approaching 100%, but their knockdown rates are only 80% or less for red imported fire ants and 40% or less for German cockroaches. Improved knockdown rates are desirable to ensure effective protection of persons and property from general household pests.

In the present invention a new insecticidal composition has been developed to significantly improve knockdown rates of general household pests.

SUMMARY OF THE INVENTION

It has now been unexpectedly found that applications of an insecticidal composition containing a mixture of bifenthrin and acetamiprid, results in a continuous chemical barrier that provides both high knockdown and mortality rates to general household pests. Other aspects of the present invention will also be apparent.

DETAILED DESCRIPTION OF THE INVENTION

It has now been unexpectedly found that an insecticidal composition containing bifenthrin and acetamiprid, results in high knockdown and mortality rates of general household pests. A preferred liquid insecticide composition of the present invention is comprised of 0.06% by weight to 0.12% by weight of bifenthrin and 0.05% by weight to 0.10% by weight of acetamiprid.

A liquid insecticide is any formulation containing an insecticide where the formulation is dispensed in an aqueous medium prior to its application to a locus where general household pest control is needed. That is to say, a liquid insecticide is made up of 1) an insecticide, 2) an aqueous medium and 3) other additives conventionally employed in insecticidal formulations (e.g. surfactants, wetting agents, freeze/thaw agents). All formulations of insecticides that are or can be dispensed in an aqueous medium prior to application are, therefore, within the scope of the present invention (e.g. Micro-emulsions, Suspension concentrates, Emulsifiable concentrates, Wettable powders, Water dispersible granules, Capsule suspensions, Emulsifiable granules or combinations thereof).

The compositions of the present invention may be derived from commercially available formulations of insecticides. For example, bifenthrin, sold by FMC

Corporation under the names and trademarks of TALSTAR® GC FLOWABLE INSECTICIDE/MITICIDE, or TALSTARONE® MULTI-INSECTICIDE, to name a few, find utility in the present invention. Formulations of acetamiprid that are particularly useful in the context of the present invention include, without limitation, acetamiprid (sold under the name and trademark of INTRUDER), sold as a 70% wettable powder. Using methods known to one skilled in the art, the above-mentioned formulations of insecticides can be dispersed in an aqueous medium to provide a composition containing an insecticidally effective amount of an insecticide.

The following examples further illustrate the present invention, but, of course, should not be construed as in any way limiting its scope. The examples set forth certain biological data illustrating the efficacy of the compositions of the present invention in controlling general household pests. Unless otherwise indicated, all parts, percentages, and the like are by weight.

EXAMPLE 1

Test to Determine German Cockroach Knockdown and Mortality Rates by Applications of Combinations of Bifenthrin and Acetamiprid

The compositions of the present invention were tested for German cockroach activity in the following manner:

Test compositions made up of TALSTARONE® MULT-INSECTICIDE and a 70% wettable powder of acetamiprid in distilled water were prepared that provided appropriate rates of application of combinations of bifenthrin and acetamiprid, as well as bifenthrin and acetamiprid alone.

The spray chamber was then calibrated to deliver the treatment solution at the desired volume and pressure over the desired area on the chamber shelf. Spray chamber shelf height was adjusted to approximately 18 inches from the spray tip. The shelf was then covered with aluminum foil and the center of the shelf from front-to-back and end-to-end was determined. A desired number of 4.0" sieve circles were marked on the aluminum foil with a permanent marker. The inside of a desired number of PVC rings were coated with a petroleum jelly / mineral oil mixture (1:2 ratio). The PVC rings were place on the sieve circles. 10 male German cockroaches were placed inside each PVC

ring. The sprayer was activated and the test compound was applied to each PVC ring interior. German cockroach knockdown and mortality were measured. The following results were recorded:

Table 1
Knockdown and Mortality of German Cockroach by Application of Combinations of Bifenthrin and Acetamiprid

Treatment	Rate of Appln. (PPM)	Rate of Appln. (% by weight)	Knockdown Rate @ 10 minutes (%)	Mortality Rate @ 30 minutes (%)
A	600	0.06	0	60
B	1000	0.10	38	93
A + B	600 / 1000	0.06 / 0.10	63	98
Untreated	0	0	0	0

A is bifenthrin
B is acetamiprid

EXAMPLE 2

Test to Determine Red Imported Fire Ant Knockdown and Mortality Rates by Applications of Combinations of Bifenthrin and Acetamiprid

The compositions of the present invention were tested for red imported fire ant activity in the following manner:

Test compositions made up of TALSTARONE® MULTI-INSECTICIDE and a 70% wettable powder of acetamiprid in distilled water were prepared that provided appropriate rates of application of combinations of bifenthrin and acetamiprid, as well as bifenthrin and acetamiprid alone.

The spray chamber was then calibrated to deliver the treatment solution at the desired volume and pressure over the desired area on the chamber shelf. Spray chamber shelf height was adjusted to approximately 18 inches from the spray tip. The shelf was then covered with aluminum foil and the center of the shelf from front-to-back and end-to-end was determined. The red imported fire ants to be treated were collected and placed in screened 16 oz paper cups. The paper cups were placed onto the aluminum foil on the spray chamber shelf. The sprayer was activated and the test compound was

applied to each paper cup interior. Red imported fire ant knockdown and mortality were measured. The following results were recorded:

Table 2
Knockdown and Mortality of Red Imported Fire Ant by Application of Combinations of Bifenthrin and Acetamiprid

Treatment	Rate of Appln. (PPM)	Rate of Appln. (% by weight)	Knockdown Rate @ 10 minutes (%)	Mortality Rate @ 30 minutes (%)
A	600	0.06	78	100
B	500	0.05	0	15
A + B	600 / 500	0.06 / 0.05	100	100
Untreated	0	0	0	0

A is bifenthrin

B is acetamiprid

In the context of the present invention, the term "insecticide" refers to the active chemical compound or ingredient, such as bifenthrin or acetamiprid, that kills or causes knockdown of insects. The term "liquid insecticide" refers to a formulation of an insecticide where the formulation can be dispensed in an aqueous medium prior to its application to a locus where insect control is desired. The term "locus" refers to any locations where control of insects is needed or expected to be needed. The term "general household pest" refers to any insect or pest, such as German cockroach, American cockroach, Smokey-Brown cockroach, Oriental cockroach, house fly, red imported fire ant (RIFA), odorous house ant, carpenter ant, pharaoh ant, Argentine ant, mosquito, tick, flea, sowbug, pillbug, centipede, spider, silverfish, scorpion and bed bug, that cause harm or nuisance to person or property. The term "knockdown" refers to the quick (usually within 10 minutes, depending on the insect), short-term immobilization or death of the insects. The term "mortality" refers to the death of the insects. The term "% by weight" refers to the weight of the insecticide or specified component as a percent of the total weight of the composition (e.g. including the aqueous medium, other insecticides, surfactants, wetting agents, freeze/thaw agents and combinations thereof).

Those of ordinary skill in the art will appreciate that variations of the invention

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may be used and that it is intended that the invention may be practiced otherwise than as specifically described herein. Accordingly, this invention includes all modifications encompassed within the spirit and scope of the invention as defined by the following claims.

What is claimed is:

Claim 1. An insecticidal composition suitable for use in controlling general household pests comprising a mixture of i) bifenthrin and ii) acetamiprid.

Claim 2. A composition according to claim 1, wherein the amount of bifenthrin is equal to from 0.06% by weight to 0.12% by weight and the amount of acetamiprid is equal to from 0.05% by weight to 0.10% by weight.

Claim 3. A method for controlling general household pests comprising applying an insecticidally effective amount of a composition of claim 1 to a locus where general household pest control is needed or expected to be needed.

Claim 4. A method for controlling general household pests comprising applying an insecticidally effective amount of a composition of claim 2 to a locus where general household pest control is needed or expected to be needed.

Claim 5. The method according to claim 3, wherein said general household pest is selected from German cockroach, American cockroach, Smokey-Brown cockroach, Oriental cockroach, house fly, red imported fire ant (RIFA), odorous house ant, carpenter ant, pharaoh ant, Argentine ant, mosquito, tick, flea, sowbug, pillbug, centipede, spider, silverfish, scorpion and bed bug.

Claim 6. The method according to claim 4, wherein said general household pest is selected from German cockroach, American cockroach, Smokey-Brown cockroach, Oriental cockroach, house fly, red imported fire ant (RIFA), odorous house ant, carpenter ant, pharaoh ant, Argentine ant, mosquito, tick, flea, sowbug, pillbug, centipede, spider, silverfish, scorpion and bed bug.

Claim 7. The method according to claim 3, wherein said locus is selected from a general household pest-infested structure, a structure that is expected to be general household pest-infested, or a location adjacent to said structures.

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Claim 8. The method according to claim 4, wherein said locus is selected from a general household pest-infested structure, a structure that is expected to be general household pest-infested, or a location adjacent to said structures.

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ABSTRACT

The present invention relates to an insecticidal composition of bifenthrin and acetamiprid with significantly improved knockdown and mortality characteristics when applied to general household pests.